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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,576	11/17/2000	Hua-Shuang Kong	5000.89A	5716

21176 7590 05/06/2003

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 05/06/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/715,576

Applicant(s)

KONG ET AL.

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 10, 21, 22, 24 and 29-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10, 21-22, 24 and 29-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 10, 21-22, 24, 29 and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al (US 4579080) in view of MacLeish et al (US 5653808).

Martin et al disclose a reactor vessel of quartz (fig 9-61) enclosed inside another cylinder of a dielectric material to make it transparent to electromagnetic radiation (Abstract), having a gas supply system (69) induction coils as a source of electromagnetic radiation (75) and a barrel type (Fig 9) or horizontal type (Fig 4 and Col 7 line 67), thermally responsive first susceptor portion (64 and Col 8 line 3-10), made of graphite coated with silicon carbide (Col 7 line 60), second susceptor portion as the metal coated cylinder around the first susceptor (Fig 9-74 and 61) spaced optimally to allow flow of reactive gases as well as allow them to heat each other (Col 11 line 24-28 and Col 12 line 52-63) and first susceptor having plurality of pockets to receive substrates (Fig 9) .

Martin et al do not disclose the second susceptor made of graphite coated with silicon carbide.

MacLeish discloses an epitaxial apparatus containing a susceptor of two parts where the second susceptor is made of graphite coated by silicon carbide (Fig 2-32 and Col 4 line 21-25).

Art Unit: 1763

There fore it would have been obvious to one of ordinary skill in the art at the time invention was made to have a coating of silicon carbide on graphite on both parts of the susceptor so as to prevent migration of carbon from susceptor to substrate and reduce contamination.

3. Claims 1-2, 10, 21-22, 24 and 29-31 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmura et al (US 4848272) in view of MacLeish et al (US 5653808) and Martin et al (US 4579080).

Ohmura et al disclose a reactor vessel of quartz (Fig 1-1) which would make it transparent to electromagnetic radiation, having a gas supply system (10), induction coils as a source of electromagnetic radiation (13,14) being barrel type (Fig 1), thermally responsive (Col 4 line 15-38) first susceptor portion (2), thermally responsive (Col 4 line 15-38) second susceptor portion (5), spaced optimally to allow flow of reactive gases as well as allow them to heat each other (Fig 1), and plurality of pocket to receive substrates (Fig 1).

Ohmura et al do not disclose the first and second susceptor made of graphite coated with silicon carbide.

It is very common to coat chamber components made of graphite with silicon carbide to prevent migration of carbon to substrate and cause micro contamination.

Martin et al disclose a part of susceptor to hold substrate made of graphite coated with silicon carbide (Col 7 line 60).

MacLeish also discloses a part of susceptor made of graphite coated by silicon carbide (Fig 2-32 and Col 4 line 21-25).

Art Unit: 1763

There fore it would have been obvious to one of ordinary skill in the art at the time invention was made to have a coating of silicon carbide on graphite part to prevent migration of carbon from susceptor to substrate.

Response to Amendment

Applicants amendment filed 03/17/2003 have been considered but the arguments are not persuasive.

Applicant argues that cited references taken as a whole fail to identify the problem addressed by the invention or the solution employed by the invention. Specifically the art of record fails to identify the axial, radial and surface to surface temperature gradient that cause mechanical distortion in substrate wafers during deposition and problems that result therefrom.

The examiners position is that in this instance the prior art of record discloses or fairly suggests all the claimed limitations. Issues relating to the performance are not primary to the issue of patentability of claims directed to an apparatus. Nevertheless Martin, Ohmura and MacLeish do address the issues of temperature uniformity and thermal gradient in their specifications.

As amendments to the claims 1 and 21 do not add any apparatus limitations to these claims the rejections from the last office action are repeated here.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

Art Unit: 1763

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK
May 3, 2003



SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
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